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THESIS

A DECADE OF EXPERIENCE: WHICH NETWORK STRUCTURES MAXIMIZE FIRE SERVICE CAPACITY FOR HOMELAND SECURITY INCIDENTS IN METROPOLITAN REGIONS?

by

Robert Giorgio

December 2011

Thesis Advisor:	Sam Clovis, Jr.
Second Reader:	Lauren Fernandez

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13. ABSTRACT (maximum 200 words)

The Philadelphia metropolitan region is the fifth most populated metropolitan region in the United States. One method of providing homeland security services involves the use of regional response networks to achieve the capacity required to respond to terrorist incidents. The Philadelphia metropolitan region presents a challenge of coordination because there are two FEMA regions, two state borders, two state offices of emergency management, eight county emergency management offices, and 317 local government emergency management coordinators involved.

This thesis examines three regional networks to identify the features of successful regional arrangements. The research includes the assessment of leadership, structure, and regional performance to identify features that can serve as recommendations for the Philadelphia Metropolitan Region. The research reviews the impact of federalism on regional networks and identifies one system—the Metropolitan Planning Organization—that serves shared federal, state, and local functions within regions. Recommendations center on creating a regional integrative network that utilizes existing fire service capacity to deliver functional homeland security.

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Robert Giorgio
Fire Chief, Cherry Hill, New Jersey
B.A., Holy Family University, 2001
M.A., University of Pennsylvania, 2004

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requirements for the degree of

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December 2011**

Author: Robert Giorgio

Approved by: Sam Clovis, Jr.
                  Thesis Advisor

                  Lauren Fernandez
                  Second Reader

                  Daniel Moran
                  Chair, Department of National Security Affairs

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This thesis examines three regional networks to identify the features of successful regional arrangements. The research includes the assessment of leadership, structure, and regional performance to identify features that can serve as recommendations for the Philadelphia Metropolitan Region. The research reviews the impact of the current state of federalism on regional networks and identifies one system—the Metropolitan Planning Organization—that serves shared federal, state, and local functions within regions. Recommendations center on creating a regional integrative network that utilizes existing fire service capacity to deliver functional homeland security.

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LIST OF ACRONYMS AND ABBREVIATIONS

9/11 Commission	National Commission on Terrorist Attacks
CBRNE	Chemical, Biological, Radiological, Nuclear and High Yield Explosive
CERT	Community Emergency Response Teams
CFR	Council on Foreign Relations
CRS	Congressional Research Service
CWG	County Working Group
DHS	Department of Homeland Security
DoD	Department of Defense
DOJ	Department of Justice
ESF	Emergency Support Functions
FCDA	Federal Civil Defense Administration
FEMA	Federal Emergency Management Agency
GAO	Government Accountability Office
JTTF	Joint Terrorism Task Force
MMRS	Metropolitan Medical Response System
MPO	Metropolitan Planning Organization
NAC	National Advisory Council
NAPA	National Academy of Public Administration
NCR	National Capital Region
NFPA	National Fire Protection Association
NGO	Non Governmental Organization
NIMS	National Incident Management System
NJDSPTF	New Jersey Domestic Security Preparedness Task Force
NJOEM	New Jersey Office of Emergency Management
NJSP	New Jersey State Police
NPD	National Preparedness Directorate
NRF	National Response Framework
NRP	National Response Plan

ODP	Office of Domestic Programs
OHSP	Office of Homeland Security and Preparedness
PEMA	Pennsylvania Emergency Management Agency
QHSR	Quadrennial Homeland Security Review Report
RCP	Regional Catastrophic Preparedness
SAA	State Administrative Agency
SOC	Self Organized Criticality
UASI	Urban Area Security Initiative
USAR	Urban Search and Rescue
USCD	United States Civil Defense
WMD	Weapons of Mass Destruction

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I.   INTRODUCTION

The fire service is one of the oldest public services provided by local government in the United States, first documented in 1736 in Philadelphia, Pennsylvania. As an enterprise, the fire service has evolved from a single-purpose service focused on controlling fires to a multidimensional response element responsible for pre-hospital medical care, fire control, terrorism response, hazardous materials response, weather emergencies, and accidental disasters. Response to terrorism, the focus of this thesis, is a relatively new function that has emerged in the past 15 years. Starting in 1997, the Department of Justice initiated training programs aimed at preparing local fire service first responders to respond to terrorist acts.

The current fire service response system does not support scalable deployment or seamless on-scene integration, nor does it make use of excess regional fire service capacity. The problem starts with local deployment models that focus on structural firefighting only, instead of integrating emerging needs associated with natural disasters and terrorism. Since 1977, structural fires have declined 56 percent in the United States, while fire service deployment schemes remain relatively unchanged during the same period (National Fire Protection Association [NFPA], 2011b). In addition, emergencies caused by the deterioration of aging infrastructure and ongoing natural disasters require fire services to advance thinking beyond traditions that no longer serve a broader public safety purpose. The complexity of terrorist incidents requires a regional response system that uses existing resources as a cohesive team.

The new field of homeland security, as an additional mission requirement for emergency management and public safety enterprises, has passed its tenth anniversary. With this milestone, fire service organizations have an opportunity to address constraints such as limitations of leadership that keep us from building robust regional networks. How we frame our response to the reluctance to embrace a regional fire service model is important, and treating outlying factors/problems that evade correction will be necessary to build into any subsequent enterprise. Effective leadership is at the center of examples

1

of interconnected fire service systems that continue to evolve in the United States. The homeland security enterprise continues to face challenges related to coordination and the integration of response elements. The GAO reported:

> The American governance system, divided into federal, state, and local jurisdictions, does not provide a natural vehicle for addressing public policy issues from a regional, multijurisdictional perspective. The autonomy of local jurisdictions and competing priorities within and among them can make regional coordination difficult. (United States Government Accountability Office [GAO], 2004)

No one agency can perform all of the simultaneous tasks required to assert control over a terrorist attack. The same claim applies to natural disasters, as was painfully reinforced during hurricanes Katrina and Rita.

The effort to evolve a professional planning capability for homeland security is problematic at this stage, and this deficiency negatively affects strategic decisions, enterprise readiness, and operational capability. Lessons learned from Hurricanes Katrina and Rita indicated the need to correct the "weakness of our regional planning and coordination structures" (Townsend, 2006). However, the Philadelphia Metropolitan Planning Organization is an example of an effective regional network. This organization effectively facilitates regional transportation projects on behalf of federal, state, and local governments.

Another ongoing dilemma is the need for regional plans to include addressing the need for sufficient response capacity and the basic plans required to coordinate these resources when they assemble. Findings from the federal TOPOFF (Top Officials) exercises verify that inadequate plans limit first-responder capability (CRS, 2008). Recommendations for solving this weakness include using creative methods to develop adequate capacity to meet incident requirements. In this regard, the federal government is encouraged to facilitate regional planning in order to develop potential solutions.

Research Question(s)

The following questions will be addressed in this thesis:

1. Given a recognized deficiency in organizational structures, what network approach would assist the fire service in the Philadelphia region in providing an integrated response to a homeland security incident?

2. How does federalism affect the regional integration of fire services, and how do we address the tension that results from not having a functional network that coordinates federal, state, and local government activities?

This project was developed on the basis of finding an appropriate methodology and resources to address the questions above. The following sections provide the substance of that work.

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II. LITERATURE REVIEW

A. INTRODUCTION

The purpose of this literature review is to assess sources relevant to the delivery of fire department first-responder services, inclusive of both their traditional services and the new responsibilities that address terrorist events. The federal government continues to develop and issue criteria to address expectations and improve homeland security coordination. The existing literature argues that the Federal Emergency Management Agency (FEMA) and the Department of Homeland Security (DHS) do not have processes to measure public-safety capability in light of the funding expended for these purposes. A review of sources, including Government Accountability Office reports, Congressional Research Service reports, panel presentations, congressional testimony, working papers, policy papers, after-action reports, and scholarly studies provided the context for the analysis.

Approximately 30,000 fire departments protect the United States. Those departments are delineated into four types: all volunteer (70 percent), mostly volunteer (16 percent), mostly career (6 percent), and all career (8 percent). In relation to their protection of the population, the all-career and mostly-career departments protect 63.7 percent of the population, and the mostly volunteer and all-volunteer departments protect 36.3 percent of the population (NFPA, 2011a).

The Analysis and Research division of the National Fire Protection Association prepared needs assessments of the U.S. fire service in 2001, 2005, and again in 2010 (NFPA, 2011a). The reports conclude that 65 percent of all fire departments responsible for hazardous-materials response have not formally trained all their personnel. Notably, 10 years after 9/11, fire departments charged with responding to incidents involving chemical/biological agents with injuries confirm that over 80 percent of departments still cannot handle such an event with local specialized equipment alone—the same result that was reported in 2001 and 2005. The results of this assessment are cause for concern since

DHS has made it a strategic priority to strengthen response capacity nationwide and a funding priority within the State Homeland Security Grant Program to fund CBRNE response capability.

The plan to prepare local firefighters to respond to terrorist incidents makes sense since firefighters already have the benefit of advanced training with hazardous chemicals via the Hazardous Materials Technician training program. In 1985, the Occupational Safety and Health Administration developed the Hazardous Waste Operations and Emergency Response Guidance Manual. This facilitated the creation of hazardous materials response teams (Haz-Mat) within fire departments across the United States. The final standard, titled "HAZWOPER Standard 1910.120—Hazardous Waste Operations and Emergency Response," provided a standard method of responding to hazardous-waste emergencies in fixed facilities and those involving highway transportation incidents.

Domestic events such as the 1995 Oklahoma City bombing and international events such as the Tokyo sarin gas attack and the bombing of Khobar Towers in Saudi Arabia resulted in the President's signing into law the Nunn-Lugar-Domenici Act, which had the aim of preventing the use of weapons of mass destruction in the United States. In the late 1990s, the American Fire Service joined the U.S. domestic preparedness program as a first responder to CBRNE attacks. The Nunn-Lugar legislation directed the Secretary of Defense to train federal, state, and local first responders in emergency response related to weapons of mass destruction (CBRNE). The Office of Domestic Preparedness (ODP) wrote a training strategy to prepare our nation to respond to WMD incidents that included 10 disciplines involved in response performing 152 unduplicated tasks (Pelfrey, 2001).

During the past 10 years, the fire service has advanced its scope of service to include response to chemical, biological, radiological, nuclear, and explosive (CBRNE) incidents and terrorist mass-casualty events. Shortly after 9/11, the pressure to build fire service capabilities was steady, and the fear of falling short when the next attack occurred was noticeable within the fire service and from local elected officials.

B. THE INFLUENCE OF FEDERALISM ON THE EVOLUTION OF FIRE SERVICE RESPONSE TO HOMELAND SECURITY INCIDENTS

The fire service is an active partner in the homeland security enterprise. The homeland security enterprise includes federal, state, and local government elements. Prior to September 11, 2001, the foundation emergency-operations plans outlined the role and responsibility of local, state, and federal participants in what was then termed "emergency management." After September 11, 2001, new expectations evolved, and the roles and responsibilities of local, state, and federal participants changed. The Department of Homeland Security adopted the existing emergency management structure for intergovernmental operations for homeland security (Gerber, 2005). Assessments continue to question the ability of local governments to achieve federally defined capabilities. Research identifies the influence that models of federalism and adopted structures like emergency management contribute to achieving homeland security.

Evidence suggests that a distinct tension exists between local governments' capability and the federal government's expectations in homeland security. The federal government prepared its own list of expected capabilities for fire service first responders outside of a widely accepted standardized system within the National Fire Protection Association. The literature is consistent and covers the periods prior to, just after, and ten years past 9/11 (Wise, 2002; Kettl, 2003; United States Department of Homeland Security [DHS], 2010b). The causes of the tension between governmental actors include lack of trust, lack of ownership, and the lack of partnerships between federal and local government actors (National Academy of Public Administration, 2004).

The behavior of bureaucratic institutions is important to the homeland security enterprise. James Q. Wilson, in his text *Bureaucracy*, described the struggles associated with a bureaucracy, including the difficulty of implementing policies from within large institutions like the Department of Homeland Security. Further, Wilson illustrates one of the notable challenges for government working within a rigid system that is not adaptive to the challenges of modern government (Wilson, 1989, p. 377).

After 9/11, the practice of emphasizing federal-state relations rather than federal-local relations continued, even though the critical duties required the use of local fire, police, and emergency medical personnel (Caruson & MacManus, 2006). The top-down effect of this policy is consistent with coercive federalism (Fossett, Kettl, & Posner, 2003). According to Clovis,

> the most recent documents, however, give no mention of federalism, and have changed the rhetoric from seeking coordination, and collaboration with state and local partners to merely seeking consultation with other levels of government. (Clovis, 2008a, p. 6)

How do these rules relate to the participants within the homeland security system? The federal structure assumes that since it has delivered a set of rules for everyone to utilize, everyone is therefore prepared. The state structure assumes that since it has implemented the rules, it can expect local governments to execute the requirements as written. The local government position, however, is that the rules are complicated, no one asked for local government input, and local government can accomplish only a few, if any, of the proposed tasks.

The subject of federalism is important to the research in context of these evolving roles and, more importantly, in the context of the new criteria that direct local-government performance in the homeland security enterprise. Paul Posner, in his conference paper *The Role of Home in Homeland Security: The Federalism Challenge*, identified cooperative federalism as the more traditional model and coercive federalism as inevitable in light of the continued federal mandate on local and state governments (Fossett, Kettl, & Posner, 2003). Clovis, in *Federalism, Homeland Security and National Preparedness: A Case Study in the Development of Public Policy,* offers the concept that competitive federalism provides an opportunity for communities to join forces to accomplish a purpose, each providing inputs that result in commonly shared outputs (Clovis, 2006). The subject of federalism and national security has evolved since World War II, when the principal concern was that of an enemy attack on civilian targets. Emergency federalism, a method of coordinating local, state, and federal government

planning during "normal times" and unified command during emergency incidents, satisfied the tension that occurs between centralization and decentralization (Collier, 2008).

Another perspective considered is the creation of a new theory that suggests a greater reliance on collaboration among federal, state, and local governments, titled collaborative federalism. Collaborative federalism is specific to the new relationships that exist within the homeland security enterprise. Tenets of collaborative federalism place the DHS in a facilitator role, with funding to state and local governments that have wide latitude in implementing homeland security programs. Collaborative federalism requires state and local governments to work both horizontally and vertically, making the best use of resources while maintaining a service cost approved by the taxpayer (Clovis, 2006).

The problem of coordination is not new. According to Kettl:

It is, at the core a problem of governance—of linking the elements of the U.S. system, governmental and nongovernmental—into a coordinated system of defense. It is a problem of defining what defense means, how much protection is enough, how much Americans are willing to pay for it, what sacrifices they are willing to tolerate, and how to make the system work effectively. It is, in brief, a problem of political leadership. (Kettl, 2003)

Building on Kettl's notion that a fresh approach to solving coordination is a public management imperative, the use of "contingent coordination" looks promising.

The problems associated with homeland security are not new in the arena of public administration. The challenge today is that, in place of managing public services for fixed demands such as snow removal or crowd control, public managers must devise systems that can react to a wide range of threats. The solutions to these problems require an investment in a collaborative response system involving many layers of government and external agencies. The remaining challenge for government leaders is the recognition that the efforts in preparation are expended for problems that "may occur rarely, and may never repeat" (Kettl, 2003).

Between 2002 and 2010, the Department of Homeland Security developed and implemented a number of policy instruments, guidelines, and strategies intended to

secure the homeland and to develop response capability. During this same period, the United States taxpayer invested $34 billion into the creation of the homeland security enterprise (Kean, 2011). Government researchers and duly charged inspectors continue to highlight concerns with the homeland security enterprise, specifically its true ability to respond to terrorism and disasters, the complexity of current strategies, and the lack of systems to assess preparedness.

The literature provides two conflicting positions when the subject of federal grant funding is included in the discussion. One position advocates "giv[ing] local governments flexibility; and more money to create a better system from the bottom up" (Kettl, 2003, p. 5). Another position argues that if the federal government does not pay for the function, "we won't be able to do it" (Fossett, Kettl, & Posner, 2003, p. 37). The literature also expresses a position shared by local governments advocating for a change from categorical grants to block grants for greater flexibility. An opposing perspective on grant funding outlines the belief that the current grant process is too complicated, supports unhealthy competition, and stalls efforts to collaborate (Clovis, 2008a). Additional criticism of the grant programs includes uneven distribution, the need for competition among the participants, and the participation of fewer jurisdictions due to the transaction costs associated with the programs (Clovis, 2008a).

Local and state governments claim that many of the strategies and directives from the department of Homeland Security lack their input and advice, and are therefore ineffective. The research provides documentation of various processes used to gather input from state, local, tribal, and territorial entities, and NGOs. Methods utilized to gather input include focus groups, task forces, surveys, on-site interviews, national committees, and regional committees. The research cannot assess the degree to which the information developed using these processes has influenced the final DHS policy. The efforts undertaken by the DHS to include local government subject-matter experts have been varied and the methods have been inconsistent; the process to assess outcomes has been nonexistent.

Participants attending a conference at the Arlington County Fire Department focused on lessons learned from the 9/11 attack on the Pentagon offered suggestions by

discipline to improve regional homeland security. Focus group summaries concluded that, even though the initial response to an incident involves local first responders, DHS officials initially appear to be seeking input and advice on local issues primarily from emergency management officials at the state level. Further, most local fire and police chiefs and EMS directors appear to have no input into their own state's emergency management organization (Arlington County, 2003).

The review of the literature supports the concept that coordination in some form is a key element to successful homeland security response at the state and local government levels. For example, the literature suggests the use of an expanded nationwide mutual-aid system based on the National Incident Management System. The consensus among the reports is that no one jurisdiction can respond to the full range of threats—a position that is emphasized with the continued decline of local government budgets and, therefore, first responder positions (DHS, 2010c). Recent recommendations from the Bottom-Up Review Report (BUR) include the need to enhance disaster preparedness through close collaboration in order to establish shared objectives and capability standards. Further, the BUR recognizes the benefit of involving participants beyond the traditional coalitions and the need to seek innovative, non-traditional solutions to catastrophic events (DHS, 2010d).

While the federal government's policies, guidance documents, plans, and systems outline a unity of effort among local, state, and federal response elements, the experience in practice and during incidents demonstrates that gaps in performance and coordination still exist. The Homeland Security enterprise has not developed the appropriate apparatus to provide the type of coordinated and integrated response that our communities require and our citizens expect.

C.   STRUCTURES THAT COORDINATE HOMELAND SECURITY

The homeland security enterprise exists in varied forms across the United States, and the foundation is nestled in the emergency management framework that evolved from our efforts to secure the homeland as a possible target of nuclear attack during the cold war. The history of our earlier disaster management system is relative to today and helps

provide the context for the current system. To that end, the author reviewed a technical manual titled *Civil Defense Urban Analysis*, published in 1953, and a related abstract titled "Distributed preparedness: the spatial logic of domestic security in the United States" (Collier & Lakoff, 2008).

One of the responses to the post-World War II strategic-bombing doctrine assessed our own vulnerability and considered how to prepare the U.S. home front for nuclear attack. Civil defense planning was born out of the 1951 Civil Defense Act, which also created the Federal Civil Defense Administration (FCDA), which—much like the Department of Homeland Security—set out on an important and far-reaching mission.

The 1951 Civil Defense Act established the Federal Civil Defense Administration (FCDA), which set out to prepare the United States to confront a nuclear attack. The evolution of distributed preparedness as a discipline served disaster management so well that the concept was adapted to address other potential threats, such as hurricanes, earthquakes, and floods. The result of this evolution created a new field of expertise called "emergency management" (Collier & Lakoff, 2008).

Collier and Lakoff examined two dimensions of distributed preparedness— emergency federalism and vulnerability mapping—to assess their effectiveness on contemporary national security. With regard to background civil defense, planning focused on nuclear confrontation, then in the 1970s grew to include "all hazards planning," and then migrated to include pandemics and terrorist attacks. The United States Civil Defense recognized the concerns over sovereignty of states and localities and the ability of local governments to respond to local problems. The states have "inherent powers" charged with coordinating civil defense functions and directing responders in an emergency.

The USCD proposed two types of coordinated response: mutual aid and mobile response. Mutual aid is defined as a voluntary arrangement between communities to assist each other in time of need (horizontal coordination). Mobile response is defined as being vertically organized, focusing on emergency standby capacity, and being activated by the state to support an affected region. The primary responsibility for individual

citizens and communities was a state obligation. The federal government provides military support in the event of war-caused disasters. The USCD maintained a constitutional government; planning was conducted cooperatively; and emergencies that overwhelmed local resources used unified structures of command and coordination to meet temporary "exigencies of the situation."

Vulnerability mapping served an important role in emergency federalism since the USCD needed to understand response capacities in the event of an attack. The maps allowed planners to assess potential damage, identify response capability, and plan for resource deployment to maximize preparedness. The mapping process used three steps: target analysis, damage assessment, and contingency planning. Once the mapping process was complete, each responding agency received a map specific to its responsibility in order to clarify its role during an emergency response.

In the mid-1950s, civil defense officials recognized the opportunity to use distributed preparedness to address other potential threats, such as hurricanes, earthquakes, and floods (Quarantelli, 1995).

> "These officials applied the technique of vulnerability mapping, and the emergency federalist model of coordination to the challenges of domestic natural disaster response. In doing so, civil defense went through a paradigm change to define a new field of expertise—emergency management." (Collier & Lakoff, 2008)

The momentum for institutional change to "all hazards" in 1979 led to the creation of a new consolidated Federal Emergency Management Agency that continued to use the federalist model. In 2002, the "schema of distributed preparedness" (Collier & Lakoff, 2008) was inherited by the new Department of Homeland Security and is evidenced in the guidance offered in the department's officially sanctioned fifteen planning scenarios, such as dirty bomb, major hurricane, and influence pandemic.

"Distributed preparedness was invented as a decentralized, civilian organizational form in part to ward off Cold War concerns about the emergence of a garrison state" (Collier and Lakoff, 2008). Where it intends to assess vulnerability and response to emergencies through the boundary of American federalism, the actual result is not an

excess of security but an absence of capability, as we witnessed during the response to Hurricane Katrina.

Structures for Civil Defense, Emergency Management, and Homeland Security: A Generational Perspective				
Year	Evolution	Structure	Features	System of Relations
1950	1st Generation	Federal Civil Defense Administration	Cold War nuclear threat Distributed preparedness Vulnerability mapping	Mutual aid Mobile response
1979	2nd Generation	Federal Emergency Management Agency	All-hazards planning	Coordinating agency for state and locals
1996	3rd Generation	Federal Emergency Management Agency-Cabinet level status	Mitigation; preparedness; training and exercise; response and recovery	Coordinating agency for state and locals; DOJ begins WMD training for firefighters
2002	4th Generation	Federal Emergency Management Agency-Under newly formed DHS	Prevention; protection; mitigation; response; recovery	Coordinating agency for state and locals

Table 1.   Generational Perspective on Civil Defense, Emergency Management, and Homeland Security

Since its inception, the homeland security enterprise developed by overlaying response plans atop the existing disaster management system that originated as civil defense functions (Falkenrath, 2001). Since most local and county emergency-management roles exist on a voluntary or part-time basis, using the fragmented civil defense structure forced the new homeland security enterprise to evolve within an already underperforming set of structures (Falkenrath, 2001). Table 1 provides an overview of the start and evolution of civil defense, the features driving the role performed, and the systems used to integrate first responders. Additional homeland security duties on top of

existing responsibilities created unreasonable expectations that deprived both roles of their due attention.

We return to the problem of structure and the limitations that our chosen structure places upon our ability to organize, train, deploy, and command emergency-response resources. Falkenrath asserts that domestic preparedness is a national security program that relies on enhancements of the disaster management system, and "it is a federal program that requires capabilities to be produced by state and local agencies" (Falkenrath, 2001 p. 19). Further, the authorities and the resources associated with these programs are confusingly scattered across the bureaucracy.

D.   REGIONAL NETWORKS AND HOMELAND SECURITY

Emergency incidents are complex events and require a building-block approach as complementary resources arrive and engage the incident. When faced with unique challenges, firefighters can adapt and overcome these challenges to gain control of the incident. It is a fundamental understanding that, as incident complexity increases—such as might be the case with a terrorist event—the seamless integration of emergency responders is of even greater importance to accomplish the mission. When faced with a high consequence, low-frequency event success is measured in the responder's ability to remove people in the greatest danger, quickly diagnose injuries, treat injured patients, and rapidly transport those in need of emergency care.

Regional coordination is not the sole answer to improving the homeland security enterprise. The GAO found that even though FEMA collects data from Urban Area Security Initiative regions, it has no method to measure the effectiveness of the projects for building regional preparedness capability. Further, when FEMA encouraged the UASI regions to involve regional preparedness partners from the metropolitan statistical area (MSA) of 27 regions surveyed by GAO, 20 UASI regions reported that there were no plans to involve other communities (GAO, 2009). GAO reports identified the need for a national homeland security strategy in place of a purely federal strategy. The GAO concluded that regional approaches are important to ensure that federal spending is complimentary and coordinated and that it closes existing security gaps.

The Department of Homeland Security continues to develop polices for homeland security. One example is the evolution of the National Response Plan to the National Response Framework that now includes both strategic and operational plans. The National Response Framework serves as the federal overarching plan integrating local, state, and federal response elements. The NRF recognizes state and federal components, including the state emergency operations center, state coordinating officer, FEMA Regional Response Coordination Center and the Joint Field Office when established. The emergency support functions outline in detail the federal response and the use coordinators for each function. The missing language in the NRF is the inclusion of foundation guidance intended to build regional networks for response.

Recommendations presented in "Perspective on Preparedness: Taking Stock Since 9/11" by the Local, State, Tribal, and Federal Preparedness Task Force include the necessity to include local governments, among others, in the policy and guidance process. Specifically, the task force recommended the inclusion of local, state, tribal, and territorial officials in all stages of policy development and implementation. The task force suggested that DHS connect existing regional and national advisory panels to create a unified policy advisory system (DHS, 2010c).

The task force recognized the importance to the national and regional advisory councils of regional inclusion. Referring to the regional advisory council as a "node" infers, as it should, that local, state, tribal, and territorial are components of the response network. The task force found value in embedding local, state, tribal, and territorial officials in FEMA's national preparedness directorate (NPD) in order to provide NPD staff with a regional perspective and to provide two-way communication between the National Advisory Council (NAC) and the NPD.

E.   FEATURES OF REGIONAL RESPONSE CAPABILITY

Recent literature outlines the study of response capability and its application to homeland security. Congress, research institutions, and homeland security practitioners continue to assess how grant-funding investments translate to response capability. The use of defined measurements, such as a vulnerability analysis of critical infrastructure, is

an example of methods undertaken by emergency planners to reinforce capability (Caruson & MacManus, 2008). The process of building response capability as a function of reliability is prospective and uses information gained from experience, prior response failures, and responses to the right questions (Jackson, 2008). Prior reports criticized the DHS for not providing uniform criteria to the first-responder community to accomplish the goal of building an integrated homeland security network.

On March 17, 2011, William Jenkins, Jr., Director of Homeland Security and Justice Issues at the GOA, testified before the U.S Senate Committee on Homeland Security and Government Affairs. Jenkins testified that FEMA has implemented a number of efforts to define response capability and capability with no measurable success. The conceptual illustration submitted with Jenkins's testimony visually depicts the problem facing local governments, such as the need for response capability in the initial stages of the emergency and the available response capability from the current system. DHS is reliant on the success of the regional network to gain control of major incidents during the initial operational period.

The literature confirms that this specific challenge is not new. As early as 2001, Falkenrath raised this issue by noting that the domestic preparedness program relates to the execution of a particular legislative mandate (Falkenrath, 2001). The problem that Falkenrath notes is that a mandate that is too broad limits the ability of decision makers to allocate resources and provides no method to measure progress (Falkenrath, 2001).

Figure 1: Conceptual Illustration for Assessing Capability Requirements and Identifying Capability Gaps for National Preparedness
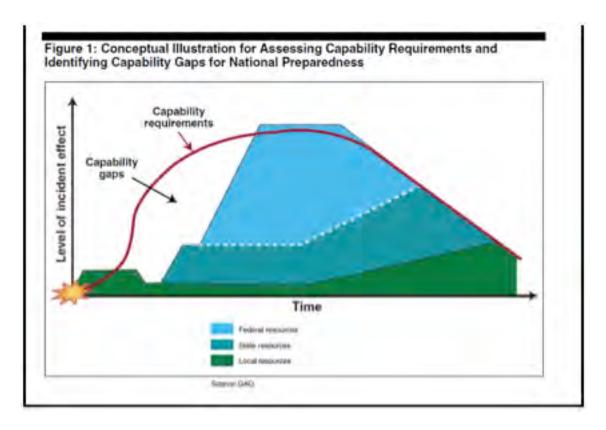
Figure 1.   Capability Requirements and Capability Gaps (from Jenkins, 2011)

Moving ahead once again, in 2007 Mackenzie M. Eaglen of the Heritage Foundation completed an assessment of the DHS budget for Fiscal Year 2008. While suggesting that Congress pass both the homeland security authorization and appropriations bills, Eaglen also recommended improvements to the system. Eaglen argued for the creation of a homeland security strategy that included all levels of government. In addition, she recommended investment in a "true" national preparedness system, in place of grant funds focused on individual state and local needs. Further Eaglen suggested that federal funding should help state and local governments integrate their counterterrorism, preparedness, and response efforts to support a national preparedness system (Eaglen, 2007).

Recent efforts such as "Perspectives on Preparedness" (DHS, 2010c) brought together 36 stakeholders from local, state, tribal, and federal agencies to assess national preparedness and to solicit recommendations for improvement. One focus area was intended to improve response capability included the creation of a national mutual-aid

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system based on the National Incident Management System. The proposal recognized the need to assess the policy, legal, and operational challenges that limit our current system. Notably, the participants recognized the current fiscal retrenchment that is influencing local public safety services, seeing this as an opportunity to encourage regionalized approaches. Another recommendation included the notion that no single jurisdiction can handle the full range of threats and hazards; the creation of a NIMS resourcing inventory capable of national deployment can improve the current homeland security system (DHS, 2010b). Further, the task force identified an overarching recommendation: "Prioritize development, and phased implementation of a national preparedness assessment framework" (DHS, 2010b, p. 36).

F.   CONCLUSION

A report card prepared by the Bipartisan Policy Center National Security Preparedness Group (Bipartisan Policy Center [BPC], 2011) asserts that, a decade after 9/11, the nation is still not prepared for a catastrophic disaster. The BPC claims that the response system still lacks comprehensive planning across federal agencies, and with state and local authorities. "The DHS Inspector General found the federal government has not adequately developed catastrophic disaster operations plans to address 'specific roles, responsibilities, and actions of each federal department, and agency responding to an incident'" (BPC, 2011). The absence of specific plans is a fundamental flaw that constrains local and state governments from maturing the homeland security enterprise— and one that increases risks for first responders.

The International Association of Fire Chiefs identifies formal interagency standard operating procedures, automatic aid that supports periods of peak demand, and the adoption of NIMS used daily in routine calls for service as good practices for regional coordination. These same practices proved successful during the Arlington County Fire Department and National Capital region response to the Pentagon on 9/11.

The literature reviewed supports the notion that the way to strengthen the response to terrorism and natural disasters is by improving regional networks. The homeland security enterprise recognizes the need for regional solutions to improve

response capability and to maximize the return on federal grant investments. Planning is a key theme in the literature reviewed for this thesis. The development of a properly resourced regional catastrophic preparedness staff is justified since local government planning officials are often not able to gain experience in the planning discipline. The evolution of homeland security requires a model aimed toward creating networks and integrating existing resources. The fire service is in a position to advance a network structure designed to build response capability.

III. METHOD

A. INTRODUCTION

This thesis is based on qualitative research methods designed to collect data on three regional networks: 1) National Capital region, 2) Kentucky, and 3) Philadelphia metropolitan region. The goal of this research is to identify the type of network that can improve the use of existing fire service resources from among the existing features of successful regions.

The research includes the assessment of current practices and policies, the influence of planning, and model networks that coordinate local fire service for homeland security. The research identifies the features of successful regions and reviews existing formal networks, such as the Metropolitan Planning Organization, that service shared federal, state, and local functions within regions.

1. Case Studies

Three case studies identify features that contributed to the successful integration of regional resources. The case study is best suited for this evaluation since it allows for an interpretation that "enables the researcher to (a) gain new insights about a particular phenomenon, (b) develop new concepts or theoretical perspectives about the phenomenon, and/or (c) discover the problem that exists within the phenomenon" (Peshkin, 1993). Limitations of the case study include the failure to consider the practical acceptance of the new structure and the importance of increased cost in the current fiscal environment. In an effort to develop the best options, the analysis includes recent bodies of work and offer examples from other public provisions that can serve as a template for the homeland security enterprise.

The case studies included the National Capital region (NCR), Kentucky, and the Philadelphia metropolitan region. These cases were selected because they provide

examples of successful regional response during emergencies and attributes that help create regional networks (Bogard, 2011; Arlington County, 2003; GAO, 2004). The salient points of these particular case studies include the following:

- The NCR has a thirty-five-year history in regional intergovernmental relations and demonstrates an optimal integration of eight fire service agencies. Further, the NCR response to the Pentagon on 9/11 is an example of a successful response and a model for other regions.

- Kentucky provides a good example since, during the winter ice storm of 2009, the state experienced a challenging operational period that provided a number of examples of successful regional efforts and illustrated the limitations caused by a failure to have situational awareness and to adapt its system.

- The Philadelphia Metropolitan Region is constrained by four potential barriers to regional networks: 1) two states, 2) two FEMA regions, 3) 317 local emergency management directors, and 4) segments of the region outside the UASI region. Specifically, the analysis examines the jurisdictional limitations, emergency-management framework, response capability, and policy issues. One segment of the region provides a positive example of partial regional coordination.

Features identified in the case studies were then applied to recommendations for the metropolitan Philadelphia region. Where appropriate, federal guidance that supports these recommendations is cited.

2. Federalism

Two additional question posed by this research were to determine how federalism affects the regional integration of fire service and how we address the tension that results from not having a functional network that coordinates federal, state, and local government activities. To answer these questions, a literature review was conducted.

B. DATA SOURCES AND COLLECTION

The general data reviewed provided context for the current challenges within the entire homeland security response system. The literature includes work that assesses major incidents, like 9/11 and Hurricane Katrina, and the capability of homeland security efforts implemented thus far. Literature that outlines specific reforms to homeland security policy around regional systems and improving networks is included in the

sources. The research assesses after-action reports, inspector general reports, and Department of Homeland Security reviews and directives to determine what is working, existing failure points, and suggested improvements to the system.

The research reviews the academic discussion of federalism and the effect that these policies have on the homeland security enterprise. The subject of federalism is central to the development of recommendations for an integrative response network.

1.   Case Study Data

The NCR case study draws upon documents that outline the formation and structure of the Metropolitan Washington Council of Governments, the NCR Strategic Plans, and the Regional Emergency Coordination Plans. The NCR's maturity, due to its 35-year history, is beneficial to the research. Further after-action reports on the 9/11 Pentagon response and remarks made by Arlington County Fire Chief James Schwartz provide the background on their lessons learned and suggestions for other regional networks.

The Kentucky case study examines a thesis by Amanda Bogard that reviewed the experience in the state of Kentucky and assessed its performance after the 2009 Kentucky ice storm. The thesis provides research and analysis on the effects of leadership and regionalization on response capability. The Kentucky data provides information relative to the results of an actual major disaster; like the NCR case study, it provides examples of features that support effective regional networks.

The Philadelphia metropolitan region case study examines information about the legal framework, as it exists in Pennsylvania and New Jersey relative to homeland security and emergency management. State emergency management internet sources provide most of the research material, with additional material from the county emergency manager when the data were not available online. The data include a review of the structures used in Pennsylvania to create the regional task forces and the New Jersey structure that lacks a regional operational connection.

2. Federalism Data

The research reviews the academic discussion of federalism and the effect of these policies on the homeland security enterprise. The subject of federalism is central to the analysis of the emergency management framework and the options that encourage an efficient and integrative response network. The literature review includes the most recent policy directives from the Department of Homeland Security and DHS goals for regional networks.

C. DATA ANALYSIS

1. Case Study Analysis

Next, the research identified successful examples of regional networks from the literature review. Within these examples, the review outlined how each case study demonstrated success and developed a list to catalog those attributes that occur under the heading of leadership. The analysis provided an opportunity to identify recurring attributes that support successful regional networks and a list of recommendations for the Philadelphia metropolitan region.

The International Association of Fire Chiefs (IAFC, 2011) provides guidance for community leaders and fire chiefs to benchmark their preparedness efforts and capabilities. The research compares the case studies where applicable to features that demonstrate minimal coordination, including failure to conduct community assessments, informal SOPs used for response, and general orientation of equipment. Emerging coordination includes a limited assessment and some coordination, initial steps to train personnel, and limited situational awareness. Optimum coordination includes complete assessments, multi-agency training, and embedded NIMS in SOPs used daily. The IAFC created a checklist for fire chiefs and community preparedness leaders to help prepare communities for terrorist incidents and all-hazard disasters. The analysis for this purpose compares each case study against the optimal performance outlined by the IAFC and then applies these features to a list of recommendations for the Philadelphia metropolitan region. In addition, the case study identifies patterns of behavior that create an

environment for affinity, or likeness, and those that constrain integration. The analysis of the literature along with the assessment of the regional networks concludes around the following attributes: 1) structure, 2) features, 3) leadership.

2. Federalism Analysis

The research begins with a review of the literature on federalism, since it is an important subject in the homeland security enterprise. The analysis provides insight into the evolving relationship among federalism, disaster management, and local government public safety. The analysis reviews each model of management to assess potential benefits and limitations against three criteria: 1) the model's effect on the creation of a regional network, 2) the model's influence on the long-term maturity of the regional fire services as part of homeland security, and 3) the model's funding source, whether federal, state/local, or both.

D. SIGNIFICANCE OF THE RESEARCH

The United States fire service has a unique role to support the domestic homeland security mission in the response to terrorist incidents. The delivery system relies on the U.S emergency management framework as a foundation, and this reliance constrains regional response capability. This thesis creates a new way of engaging regional fire services, and outlines the steps necessary to mature the system using regional fire service resources. The research proposes integrative models that create a unity of effort. Although literature exists on the problems of regional coordination, there is limited research on recommendations to improve integration of fire services in metropolitan regions.

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IV. CASE STUDY ANALYSIS AND FINDINGS

A. INTRODUCTION

The research provides an assessment of three regional emergency response systems and those features that may demonstrate good practices for others to follow. The three cases include: 1) the National Capital region, 2) Kentucky, and 3) the Philadelphia metropolitan region.

Each case study is organized into three subsections. The first subsection includes an overview of the structures involved, such as the legal formation, federal, state, and local jurisdictional boundaries, and other areas such as UASI and FEMA regions. The second subsection identifies features that contribute to the success of the region. The third subsection outlines the effects of leadership and the attributes of effective leadership in the regional systems.

B. CASE STUDY OF THE NATIONAL CAPITAL REGION

1. Structure

The National Capital region (NCR) can be considered a high-performance region because of the positive results experienced during the terrorist attack on the Pentagon on 9/11 (Arlington County, 2002). Efforts to coordinate emergency response date back to the mid-1970s, and relate to a regional vision that strengthens each fire service participant. Starting in 1975, Arlington, Fairfax and Alexandria counties initiated a borderless response plan that allows the closest fire or EMS unit to respond, regardless of jurisdiction. Successful networks require a foundation to build upon, and in Arlington County, the network starts with the county emergency management plan (CEMP). Arlington distinguishes itself by keeping its plan up to date, frequently practicing the plan, and demonstrating competence when implementing the plan. This effort may seem fundamental, but in practice, jurisdictions often fail to invest time in their emergency management plan. In addition, Arlington benefits from frequent training, exercising, and

incident experience with partners in the Washington metropolitan area, all of which contributed to a successful Pentagon response. In this regard, Arlington demonstrates the ability to "imagine" the complexity of a terrorist event and involve a diverse group of partners from federal, state, and local governments.

The National Capital region includes the District of Columbia, including the Supreme Court and the United States Capitol; Montgomery and Prince George's counties in Maryland; Arlington, Fairfax, Loudoun, and Prince William counties in Virginia; and all cities existing in Maryland or Virginia. The Metropolitan Washington Council of Governments (COG) is a 501(c)(3) not-for-profit association representing state, local governments, state legislatures, the U.S. Senate, and the U.S. House of Representatives.

Policies created by the COG include a regional emergency coordination plan that provides the structure for coordination, planning, communications, and information sharing during and after a regional emergency. Notably the plan is "deliberately broad" so that it is scalable to the scope of a regional emergency. The plan conforms to the National Response Framework and the Federal Emergency Management Agency's Comprehensive Planning Guide (CPG) 101, and the National Incident Management System. In addition, the COG has created a Regional Incident Communications and Coordination System and a Regional Incident Tracking System using a web interface.

The National Capital region utilizes a planning process to achieve its priority capabilities during a three-to-five-year period. The strategic plan outlines four goals that build upon the prior year's success and outline the updated vision of the region. An investment plan that outlines the priority investments and projects for the region supports the strategic plan. A performance measurement plan monitors the progress of these investments and keeps the regional partners informed of project status.

Planning as an activity is important to regional structures because it engages participants in goal setting and develops a sense of ownership for activities undertaken. In addition, the planning efforts require participants to spend time together learning about

each other and their respective organizations. Interjurisdictional relationships and planning are two frequently noted solutions to build and strengthen regional response capabilities (Arlington, 2003).

FEMA coordinates regional emergency management activities through the Office of the National Capital Region Coordination (NCRC). Congress established this office to provide direct coordination to the region and to provide technical support to secure the homeland. This example of focused coordination in support of the region and federal, state, and local relations is an effective model to advance the homeland security discipline. The NCR illustrates that effective networks can successfully integrate new networks, as observed in their participation as one of eleven Tier 1 Urban Area Security Initiative regions. The use of complementary networks in metropolitan regions is one process that can facilitate maturing the homeland security enterprise.

2.   Features

Analysis of the NCR reveals a network that has long-term experience coordinating emergency response. The NCR performs at an optimal level and includes a regional emergency coordination plan, complete comprehensive risk analysis of NCR critical infrastructure, and key resources (CI/KR). NCR baseline capabilities include CBRNE detection and response and NIMS embedded in SOPs used daily. The NCR shares computer-aided dispatch (CAD), voice, and data and is working to increase access to video systems for all NCR response partners.

The Arlington County Fire Department is an experienced collaborator and served with the United States Public Health Service to develop the prototype Metropolitan Medical Response System (MMRS). The MMRS provides chemical-response capability, on-site, emergency health, and medical services joining public safety and local medical-care professionals. The NCR MMRS is the model for the other MMRS systems across the nation. The outcome of this partnership produced a template for 100 metropolitan regions and is an example of the type of outcomes possible from an investment in regional networks (Arlington County, 2002).

Regional Function	Demonstration of Optimal Performance
Assessment	Assess regional ability to respond to WMD and CBRNE, Regional Emergency Coordination Plan
Assessment	Active partnerships with all fire service agencies, risk analysis of NCR (CI/KR), key collaboration on a regular basis
Preparedness	Training for all personnel, performance of multi-agency full function exercises
Preparedness	Increase capacity for medical surge and response, sustain mass care and evacuation capabilities, ER tracking for patient treatment capacities
Response	Integrate incident command post with emergency operations center for situational awareness, NIMS embedded in SOPs and used in all responses
Response	Automatic aid regularly used

Table 2.   Features of the National Capital Region

Successful Attributes	NCR Demonstration
Affinity-likeness	Region is constructed of like communities with similar public safety services
Planning	3-5 strategic plans outline 4 goals and an investment plan outlines priorities; annual work plan outlines grant funded projects
Leadership commitment	Signals its commitment to the entire organization
Shared purpose	What is gained together cannot be achieved individually
Trust	Can sustain the collaboration even in the face of disagreement

Table 3.   Successful Region Attributes: NCR Case Study

3.   Leadership

Arlington County Fire Chief Jim Schwartz outlined those factors that he attributes to successful collaborations. To provide some context, the National Capital region has enjoyed 35 years of regional collaborative experience. Prior to 9/11, Chief Schwartz was instrumental in applying visionary solutions to new and emerging problems concerning homeland security and response; specifically his role in creating the Metropolitan Medical Response System was instrumental.

Leadership is the first requirement. According to Schwartz, once the jurisdiction's leader makes a commitment to working together, this "signals" a commitment to the entire organization (Schwartz, 2011). The second requirement is the participants' understanding of the shared purpose and the knowledge that what they gain together cannot be achieved individually. Third, the participants need to understand the structure of the collaboration and their place in the structure. The fourth factor, according to Schwartz, is trust, which can sustain collaboration even in the face of disagreement and cannot be ranked in comparison to the other three factors. The NCR case study outlines successful regional attributes identified from the experience in Arlington County using data from the after-action report, lessons-learned conference, and remarks from Fire Chief Jim Schwartz. The case study provides examples from the NCR that demonstrate the connection between their experience and successful attributes.

C.   CASE STUDY OF KENTUCKY EMERGENCY MANAGEMENT

1.   Structure

In the state of Kentucky, the emergency management function is placed with the Kentucky Department of Military Affairs. Chapter 39 of the Kentucky Revised Statutes provides the legal formation, scope of duties, and structure for the emergency management functions. Chapter 39G outlines the legal formation, scope of duties, and structure for the Kentucky Office of Homeland Security. Kentucky administers emergency management using 11 administrative regions that oversee 120 counties in the state.

2.   Features

An analysis of the experience during the 2009 Kentucky ice storm reveals a list of benefits associated with regional networks that enhanced response capability and coordination during a period of peak activity. The Kentucky case study provides examples of resource allocation across jurisdictions related to regional efforts that occurred prior to the major emergency; those efforts took the form of EM exercises. Kentucky counties that implemented regional area commands reported enhanced

communications. In those Kentucky counties that implemented regionalization during the
ice storm, features associated with elevated performance appear when compared to other
regional coordinating efforts.

Regional Function	Demonstration of Emerging Performance
Assessment	Limited assessment completed and some relationship developed
Assessment	Prior planning and collaboration occurs through hospital preparedness program
Preparedness	Training for all personnel; training and network activities during prior year assist in preparedness
Preparedness	Counties that previously implemented Area Command during regional exercises did so during the storm (25%)
Response	Situational awareness with external organizations that formed area commands and 1 region of 11 formally regionalized
Response	Identified response challenges as calls for service increased to overrun state EOC

Table 4.   Features of Kentucky Emergency Management 2009 Ice Storm

Successful Attributes	Demonstration
Shared purpose	During Kentucky ice storm 11 counties formed an area command
Leadership	Emergency management should be the lead for regionalization
County emergency managers	Recommend full time county EM directors
Shared purpose	Area managers prioritize needs and provide a holistic picture to state EOC (11 regions in place of 120 counties)

Table 5.   Successful Region Attributed—Kentucky Case Study

3.   Leadership

The regional experience in the state of Kentucky during the 2009 ice storm
provides a good example of the benefit of integration prior to an incident. Amanda
Bogard (2011) reviewed the effects that regional coordination had on response capability
after the 2009 Kentucky ice storm. Bogard's research reports that, where regionalized
efforts did occur during the ice storm, those same counties had previously implemented

regional coordination during earthquake exercises conducted in March 2008. The counties that did not regionalize reported the following failures: inability to communicate because of infrastructure failure, single counties overwhelmed with their own responses and political barriers (Bogard, 2011, p. 64). Bogard claims that an area command using area managers would allow for a more holistic picture to the state EOC, and this would allow the state to focus on 11 regions, instead of 120 counties. The Kentucky experience is consistent with the Arlington County Conference Report, which recognized the importance of interjurisdictional relationships and the benefit of standardized planning and training.

Recommendations made by Bogard include the need for full-time county emergency managers funded by the State Division of Emergency Management. Conclusions for the National Capital region also recommended greater simplicity of coordination through the establishment of eight county or city emergency manager positions. The fragmented civil defense format, empowering an emergency manager within every jurisdiction, constrains the homeland security enterprise. The Kentucky case study outlines successful regional attributes that occurred during a statewide ice storm. The case study provides examples from Kentucky that demonstrate the connection between its experience and successful attributes.

D.   CASE STUDY OF PHILADELPHIA METROPOLITAN REGION

1.   Structure

The Pennsylvania Emergency Management Agency is headquartered in Harrisburg, Pennsylvania, the state capital. The Pennsylvania Emergency Management Services Code, Chapter 73, Commonwealth Services outlines the powers and duties of the Pennsylvania Emergency Management Agency (PEMA). Pennsylvania's Homeland Security Directorate was formed within and functions under PEMA. PEMA serves as the state administrative agency (SAA) for all homeland security funding.

The PEMA structure in Pennsylvania includes area offices in central, western, and eastern Pennsylvania, which provide coordination to local emergency management

coordinators and elected officials. The PEMA system also requires that each political subdivision (i.e., county, city, borough, incorporated town, and township) have an emergency-management program including a trained emergency management coordinator (EMC), an emergency operations plan (EOP), and an emergency operations center (EOC). Specific to counterterrorism, in 2002 Pennsylvania passed Act 227, the Counterterrorism Planning, Preparedness, and Response Act, which outlines counterterrorism planning, preparedness, and response. In addition, Act 227 defines the powers and duties of the Pennsylvania Emergency Management Agency, the Pennsylvania Department of Health, and the nine regional response task forces in the state.

Through Act 227, Pennsylvania created nine regional response task forces to coordinate emergency response operations. The Southeastern Pennsylvania Regional Task Force uses a collaborative approach to prepare for, respond to, and recover from emergencies. The task force includes specialized units, such as the Major Incident Response Team (MIRT), SWAT, and hazardous-materials teams, and county-based bomb squads. The task force mission area requires that the following activities be carried out:

(a) Formalize regional mutual aid and intergovernmental agreements to respond to weapons-of-mass-destruction events, chemical emergencies, and other man-made, and natural disasters;

(b) Establish an interoperable communications system within the region and western Pennsylvania for all emergency response agencies;

(c) Develop a specialized equipment resource pool specific to WMD responses utilized throughout the region;

(d) Ensure that specialized WMD training is available to all emergency services personnel and support agencies as necessary;

(e) Apply as a group for grant funding for special acquisitions and projects;

(f) Foster positive networking for information, technical applications, law enforcement intelligence, and incident prevention; and form solid relationships among all group members and participants;

(g) Develop regional response and intelligence protocol and procedures; and

(h)   Develop the ability to deliver highly trained and equipped teams of responders capable of minimizing the effects of a terrorist incident within the region. (Pennsylvania, 2002)

Within the Philadelphia metropolitan region, the Philadelphia FBI-Joint Terrorism Task Force (JTTF) serves to coordinate counterterrorism functions. The Philadelphia Urban Area Security Initiative (UASI) is a Tier I-designated Urban Area and currently encompasses Philadelphia and the surrounding Pennsylvania counties of Montgomery, Bucks, Chester, and Delaware in the UASI program.

County	Population	Sq. Mi.	Communities	County EM	Local EM
Philadelphia	1,526,006	142	1	1	N/A
Chester	498,894	715	74	1	74
Delaware	558,028	184	49	1	49
Bucks	625,249	622	31	1	31
Montgomery	861,543	487	62	1	62
Total	4,069,723	2,150	217	5	216

Table 6.   Emergency Management Coordinators by Pennsylvania County within the Philadelphia Metropolitan Region (from *Pennsylvania State Municipal Statistics*, 2011)

The New Jersey Office of Emergency Management (NJOEM) is headquartered in Trenton, the state capital. The structure in New Jersey—unlike in Pennsylvania—places the emergency management function as a section within the New Jersey State Police (NJSP) Homeland Security Branch. Three regional offices provide direct support to county emergency managers from the north, central, and south regional offices. Similar to Pennsylvania, the NJOEM system requires an appointed county emergency management coordinator, and each political subdivision (i.e., county, city, borough, incorporated town, and township) has an emergency management program including a trained emergency management coordinator (EMC), an emergency operations plan (EOP), and an emergency operations center (EOC).

The New Jersey Civilian Defense and Disaster Control Act (A: 9-33) outlines the authority and duties of the New Jersey Office of Emergency Management (NJOEM). Executive Order #5 outlines the powers and duties of the New Jersey Domestic Security Preparedness Task Force (NJDSPTF), which reports directly to the governor and is responsible for setting homeland security and domestic preparedness policy. The NJDSPTF functions within the Office of Homeland Security and Preparedness (OHSP). The OHSP serves as the state administrative agency (SAA) for all homeland security funding. It is run by a director appointed by the governor. The current structure has the New Jersey State Police maintaining control of emergency management; however, the superintendant of the State Police reports to the director of the Office of Homeland Security, Office of Preparedness and the state attorney general on matters relating to homeland security and preparedness.

County	Population	Sq. Mi.	Communities	County EM	Local EM
Camden	517,234	222	37	1	37
Burlington	445,475	804	40	1	40
Gloucester	287,860	324	24	1	24
Total	1,250,569	1,365	101	3	101

Table 7.   Emergency Management Coordinators by New Jersey County within the Philadelphia Metropolitan Region (from New Jersey Municipal Data Book, 2010)

2.   Features

In Pennsylvania, the functional network in place uses the nine regional response task forces that engage multi-county jurisdictions. Pennsylvania also benefits from the alignment of the Philadelphia-UASI region with the regional task force as a network within a network, and it has enhanced projects in both systems.

In New Jersey, the Office of Homeland Security and Preparedness (OHSP) has created 21 county working groups (CWG) that serve as multi-disciplinary planning

groups for each county. The CWG is charged with prioritizing needs, coordinating activities, and implementing homeland security initiatives. Each CWG includes representatives from county government, the county OEM coordinator, the prosecutor's office, police, fire, and EMS associations, haz-mat team, the health department, critical infrastructure, the domestic preparedness planner, and a representative of the largest local government entity. Where Pennsylvania Act 227 creates a network centered on building response capability, the New Jersey OHSP county work group process creates a coordinating mechanism that primarily focuses on procurement, rather than operational-centered activities across the region.

Regional Function	Demonstration of Emerging Performance
Assessment	Regional collaboration to prepare for, respond to, and recover from emergencies
Assessment	Creates a network within a network for planning, priorities, and projects, UASI & SPARTF
Preparedness	Establishes interoperable communications with region, training for all personnel, conducts multi-agency exercises
Preparedness	Strategic regional focus for grant funding and projects
Response	Develops regional response and intelligence protocol, formal regional mutual aid and intergovernmental agreements for response
Response	Regional response procedures, regional haz-mat, SWAT, bomb squads and major incident response teams

Table 8.   Features of Southeast Pennsylvania Regional Task Force (Philadelphia Metropolitan Region)

Successful Attributes	Demonstration
Affinity-likeness	Region consists of 4 county governments and 1 metro city government with similar public-safety services
Planning	The task force applies as a group for grants and special funding; the region aligns with UASI boundaries
Leadership commitment	County EM directors and elected officials signal their commitment
Shared purpose	What is gained together cannot be achieved individually
Trust	Can sustain the collaboration even in the face of disagreement

Table 9.   Successful Region Attributes—Southeast Pennsylvania Regional Task Force

Differences in the Philadelphia metropolitan region include the jurisdictional division between two states, separate FEMA regional boundaries for New Jersey and the exclusion of southern New Jersey from the Philadelphia UASI boundaries, and the lack of regional program collaboration within the southern New Jersey border counties. The SPARTF case study outlines successful regional attributes identified from the experience in five Pennsylvania counties, including Philadelphia, using data outlining the formation and results of task force efforts. The case study provides examples from the SPERTF that demonstrate the connection between that experience and successful attributes.

Regional Function	Demonstration of Minimum Performance
Assessment	No regional assessment complete outside of critical infrastructure
Assessment	County working groups (CWG) serve as a multi-disciplinary planning group for each county
Preparedness	Awareness training for some personnel, haz-mat specialist training for participating departments
Preparedness	NJ is within 10-mile UASI boundary but is not actively participating in UASI projects
Response	Limited situational awareness with external organizations, haz-mat task force response in place
Response	Lacks formal SOPs for response; no formal operational protocol in region

Table 10.   Features of New Jersey Counties (Philadelphia Metropolitan Region)

3.   Leadership

One of the signals of commitment is the affirmation of regional leaders participating on collaborative projects like the Southeastern Pennsylvania Regional Task Force (SPARTF). All Pennsylvania county emergency management directors sent a clear signal to their staffs that they are participating and working toward mutual goals for the region. In addition, the participants in SPARTF collectively prioritize their missions and recognize that the same capabilities are not attainable without the regional task force. New Jersey has not experienced the same leadership success demonstrated in Pennsylvania. New Jersey efforts include county multi-discipline groups working independently and efforts focused on homeland security grant purchasing without a regional homeland security strategy.

E.   FEDERALISM ANALYSIS AND FINDINGS

Federalism is at the center of the tension to advance the homeland security enterprise. The principal national preparedness documents are silent on the subject of an appropriate structure that provides a meaningful federal, state, and local government response. Disaster management is part of the foundation structure for local government public safety and includes a uniform national policy that directs how the government, NGOs, and the private sector are to coordinate and respond to emergencies.

In 1993, Congress mandated that the National Academy of Public Administration complete an objective study of the government's ability to respond to major natural disasters. This study was requested in response to failures experienced during Hurricane Andrew. NAPA concluded that, "old imperatives about the need to protect national security in established ways are being challenged by pressing domestic needs" (NAPA, 1993, p. iii). The panel highlighted the challenge of powers divided among federal, state, and local governments, and it emphasized the need to create a national system of emergency management.

According to Falkenrath , the domestic preparedness program is a subset of the U.S. counterterrorism policy. The execution of the domestic preparedness program is

remote from every other U.S. counterterrorism activity. Falkenrath claims that the domestic preparedness program is thus a hybrid of these two distinct functions and results in a number of the program's problems (Falkenrath, 2001).

Posner identified cooperative federalism as the traditional model and coercive federalism as likely in light of continued federal policy mandates. Clovis posits that competitive federalism is a method for communities to share resources (Clovis, 2006). Emergency federalism, popular during World War II, provides a method to coordinate planning in normal times and to unify command elements during emergency incidents, when the principal concern at the time was that of an enemy attack on civilian targets (Collier, 2008).

Current assumptions used by the federal and state governments to make decisions regarding local government fire services are frequently misaligned with the local operating picture. According to Clovis (2008), flawed assumptions continue to constrain the level of preparedness in our country. If we intend to advance intergovernmental management, then we need to understand what limits the process from serving the homeland security enterprise today. To solve this problem, Clovis proffered the use of the jurisdictional model and the network model. The jurisdictional model focuses on strategic planning and an assessment of the emergency management priorities. What events can exhaust local resources, and when will the jurisdiction require external support? The assessment includes a determination of whether it is best to focus investment on mitigation and protection or on response and recovery. Clovis cautions that some government professionals lack strategic planning experience; he offers collaborating with academic institutions to provide technical assistant to the community as a solution (Clovis, 2009).

Agranoff and McGuire pose the network model as appropriate for public safety, emergency management, and homeland security. The network model is subject to many barriers, such as loss of sovereign, free riding, labor issues, access to revenue, access to information, resistance to change, lack of vision, lack of leadership, lack of time, and other issues. The core of this model is making use of exiting resources or temporary excess capacity since the event is "geographically contained." The model is most

effective in dealing with horizontal integration of capacities that provide support for fixed durations. On those occasions when the entire region is committed, such as in the case of a flood, resources from other regions may be necessary to provide support. Instead of dictating the specific makeup of the network, the DHS can allow the local jurisdiction to use its local conditions to determine the best approach.

Question	Model	Effect
What is the model's effect on creating a regional network?	Top-Down	One-size-fits-all solutions are not supported by local governments nor can they perform as intended
	Donor-Recipient	National policies implemented at the local government level fail to consider local conditions and fail to make use of regional excess capacity
	Jurisdiction	Regional planning and goal setting can support the creation and development of a regional network
	Network	Regional networks create efficient networks capable of performing during times of peak activity and crisis

Table 11.   Intergovernmental Management Models and Effect on Regional Networks

Question	Model	Influence
How will the model influence long-term maturity of the regional fire services as part of homeland security?	Top-Down	The system is not able to advance participant skills since focus is limited to task execution
	Donor-Recipient	The system provides some development of participant skills in organizing, project management, and leadership
	Jurisdiction	The system provides opportunity for strategic planning, collaboration, and leadership
	Network	The system provides opportunity for strategic planning, regional problem analysis, and leadership

Table 12.   Intergovernmental Management Models and Their Influence on Maturing the Homeland Security Enterprise

Question	Model	Federal	State/Local	
What funding source will the model rely upon: federal, state/local, or a combination of both?	Top-Down	X		Categorical grants administered by state and local governments
	Donor-Recipient	X		Categorical grants, greater flexibility, less stringent compliance
	Jurisdiction	X	X	Strategic view of grants, focused on meeting program needs
	Network		X	Network provides resources with the understanding that others will augment the network with their own source resources when needed

Table 13.   Funding Sources for Intergovernmental Management Models

Federalism is a challenge to homeland security; however, federalism is not a barrier to securing the homeland or creating regional fire service networks. Leadership is essential to adapting management models to suit the jurisdiction and to advance regional network structures.

V.   RECOMMENDATIONS

> Success in battle is not a function of how many show up, but who they are.
>
> Gen. Robert Barrow

A.   INTRODUCTION

The fire service is an under-utilized resource that can close existing response capability gaps and fulfill the planning objective identified in the prevention mission area of the National Preparedness Goal. The fire service contribution to the homeland security profession is approaching its tenth year, and it continues to struggle with institutional bias that approaches every incident with legacy solutions that solve problems that only occur infrequently.

The homeland security enterprise relies on an interdependent set of relationships that exist uncomfortably among the federal, state, and local governments. The scheme of emergency management and emergency response in the local government setting has changed in a measured and consequential manner since the introduction of the civil defense program of distributed preparedness in the 1950s.

The requirement to integrate local government first responders, health, public works, NGOs, and the citizens of the community is a common conclusion; what is needed is a network to achieve the result. Further, the fire service needs to advance its response structure from legacy roles to a regional force that is "all hazards" capable. Large fire service agencies and regions such as Los Angeles, New York, and Chicago enjoy the capacity to adapt their own systems. Most if not all other fire service agencies and regions need a new framework for success. Further, the enterprise participants need to develop ways of relating that build cohesion and are vastly different from the current system.

Catastrophic destruction and the loss of human life have a way of emphasizing the problems associated with our fragmented fire service system. However, our experience over three decades causes us to conclude that we continue to resist the adoption of a new

system in favor of an existing system that fails us. On this particular subject, Kuhn wrote, "Though they may begin to lose faith, and then consider alternatives, they do not renounce the paradigm that has led them to crisis" (Kuhn, 1996, p.77).

B. RECOMMENDATIONS FOR THE PHILADELPHIA METROPOLITAN REGION

1. Create a Regional Fire Service Network Model

The fire service plays a vital role in the response to terrorism and natural disasters. Current response schemes follow long-standing traditions tasked for structural firefighting, rather than the needs required to manage a terrorist incident. In addition, the regional fire service network needs to integrate with federal and state response elements whose aim is to fulfill the mission of the homeland security enterprise. The network model builds capacity using existing available resources and builds networks of cooperation. The network model requires agency leaders to embrace a planning process that views the jurisdiction at the core of all activities in place of a frame focused on a single community. As noted in the NCR case study, the daily use of automatic aid coupled with integrated NIMS builds the cohesion needed to overcome difficulty in the face of a terrorist incident or large-scale disaster.

2. Create Strong Roles for County Emergency Managers and Re-purpose Local Government Emergency Managers

The Kentucky case study makes the claim that every county needs a full-time county emergency manager due to the importance and complexity of the tasks. The NCR and Philadelphia case studies support the benefit of strong county emergency managers to serve as facilitators and coordinators.

The regional response and planning network comes with a stronger role for county emergency management staff, but less utility in the network for local government emergency management coordinators. The new emerging role for local government emergency managers centers around the actions required from the people and the institutions within the community. One option to repurpose the cadre of local emergency

management coordinators is to direct the activities of our community emergency response teams (CERT) and non-governmental organizations (NGOs) such as churches, social organizations, and American Legions in order to qualify and empower local businesses to support volunteer efforts in preparation for and after a disaster. The result of this change can support the development of a robust system to build the type of resilient communities referenced in current DHS preparedness goals.

3.   Adopt a Jurisdictional Model for Planning and Emergency Management

The community emergency management plan serves as the foundation of an all-hazards plan to address terrorist incidents, emergencies, and natural disasters. The NCR case study illustrates the benefits of an up-to-date and frequently practiced emergency management plan. Based on the NCR and Philadelphia metropolitan case studies, we can conclude that effective planning and coordination is best facilitated from the county government level. The analysis places emphasis on the importance of planning and the benefit that jurisdictional models provide for the entire homeland security enterprise.

The fire service in general is an ideal planning partner for the homeland security enterprise because it possesses intimate knowledge about its respective jurisdictions. The fire service collects data relating to the buildings, geography, and critical infrastructure in its response districts. With additional training, it is feasible to advance the data collection capability and include preliminary disaster planning in the firefighter's scope of work. The jurisdictional model creates an environment to mature a collective system.

4.   Request an Adjustment to the Region III Boundaries

A further recommendation is to request that FEMA adjust the Region III boundaries to include the complete Philadelphia metropolitan region or create a similar structure like the FEMA Office of National Capital Region Coordination. The case studies provide support for the benefit of regional clusters. The regional fire service network is dependent upon a strong federal, state, and local government emergency management network. The existing structure divides the region in half, with three New

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Jersey counties in FEMA Region II, and the five Pennsylvania counties in FEMA Region III. If the resulting network intends to support the collective needs of the region, then it must be all inclusive.

5. Demonstrate Key Leadership Behaviors to Strengthen Regional Fire Service Networks

Arlington County Fire Chief Jim Schwartz, the incident commander at the terrorist attack on the Pentagon on 9/11, provides insight for what is missing in our efforts to build robust regions. During a recent interview on the tenth anniversary of 9/11, Chief Schwartz commented that leadership is a key requirement for success in homeland security. In addition, Chief Schwartz emphasized the need to "form strong collaborative relationships across disciplines, and jurisdictions as the best method to build strong systems of interdependence" (Schwartz, 2011).

Regional leaders need to embrace the necessity to create successful networks to strengthen all aspects of regional response. The first step for leaders is to signal their participation in the network; this will result in the organizations' commitment to a first step. The Philadelphia metropolitan region has the benefit of many strong partners with engaged public service experience that can be involved in the network.

6. The Regional Fire Service Network Needs to Adopt Features of Successful Regions

Results matter in governmental operations, and the lack of progress in our ability to manage responses to terrorist events confirms the need to make significant mid-course corrections to the homeland security enterprise. Although the National Incident Management System (NIMS) provides a management framework, the deployment system lacks a uniform network that makes the best use of regional fire service resources. The transformation needs to prepare the enterprise for full dimensional protection similar to the processes used in the military. Successful regional networks build knowledge and operational capability over time.

The Philadelphia metropolitan region needs to adopt the features of other regions that demonstrate successful response outcomes. To some degree, the regional participants need to present with an affinity or likeness that helps to facilitate the partnership. Understanding one's limitations is important, and regional networks are necessary because what the participants gain together cannot be achieved individually. Planning is another essential feature and provides direction, focus, and clarity for the participants, helping to avoid mission creep.

The features identified from the case studies include the processes, like collaboration, that help a regional network evolve. Meeting occasionally is not the same as active collaboration when the purpose is to achieve an end goal. One effective method to develop these relations is to undertake one manageable initiative initially in order to create a working relationship. Joint training and exercising is another practice that facilitates building participants' cohesion within the network. Large-scale multi-discipline exercises provide regional incident commanders and section chiefs with the opportunity to develop experience. Uniform standard operating procedures and the utilization of NIMS on everyday responses provide a disciplined response when large-scale events occur. One goal for the region is to create a fully integrated common operating picture from the emergency scene to the highest decision levels, including local, state, and federal operations centers.

One solution to the coordination problem involves the use of smooth handoffs and features that in turn improve performance and the building of a culture of ownership in the homeland security enterprise. Developing these two practices can help to provide an optimal outcome. An analogy by Police Commissioner Charles Ramsey emphasizes the potential gains from collaboration in public safety.

Charles Ramsey's anecdote, "The Relay Race":

In the 4-x-100 relay race, the outcome depends not only on how fast the individual contestants run, but also on the smooth handoff of the baton from one runner to the next. It is the same in our work place. Smooth handoffs get the best results. We are more likely to solve problems when we share information, coordinate activities, and involve everyone, smoothly and enthusiastically.

There is also another similarity. What if the runners were told to leave the stadium after they ran their individual leg of the race? "The outcome of the race is not your concern." Ridiculous, right? Yet this is what we do when we forget to get people involved in the process. We forget that everyone needs to see the results of their actions. We forget that everyone needs to feel a sense of ownership and achievement.

7.   Discussion

a.   *Reconstructing the Field*

Changing the fire service paradigm from a community-only view to a region-of-communities view is necessary to achieve homeland security Thus, regional fire services must evolve by "reconstructing the field from new fundamentals" (Kuhn, 1996). Christopher Bellavita, Ph.D, Director Academic Programs, Center for Homeland Defense and Security, wrote in February 2011:

> Existing paradigms (represented in this discussion by traditional public safety disciplines) continue unchallenged as long as they satisfactorily address the problems they face. "Paradigm testing occurs only after persistent failure to solve a noteworthy puzzle has given rise to a crisis." (Bellavita, 2011, p. 4)

Failure to make the required changes to our first-responder system continues the premise that we are prepared and secure when, in fact, the fire service knows that the system has not evolved as promised. If another attack like 9/11 or another disaster like Katrina occurs, the public reaction to a flawed public-safety response could contain the momentum to push the federal government to expand the role of the National Guard in order to provide the degree of response required. Unfortunately, existing fire services continue to be underutilized, and they must remain so since their local communities require their presence. In place of maximizing taxpayer-funded resources, we risk the creation of another layer of expensive protection for high-risk, low-frequency incidents.

Bellavita (2011) used Thomas Kuhn's research on scientific revolutions to provoke thinking about the homeland security perspective and the best means to retool current public-safety resources. Kuhn asserts that, in order for us to effect a change in the current paradigm that we accepted post–September 11, 2001, we must simultaneously accept a new paradigm. "The decision to accept another and the judgment leading to that decision involves the comparison of both paradigms with nature, and with each other." The process requires a "reconstruction of the field from new fundamentals, a reconstruction that changes some of the field's most elementary theoretical generalizations"; thus, "when the transition is complete, the profession will have changed its view of the field, its methods, and its goals" (Kuhn, 1996, p. 85).

In its role as a CBRNE response element, the fire service has already adopted a new set of fundamentals. The next step in the process is to identify the overlap between the old and the new paradigms. The path forward includes the development of a new system of relating that maximizes fire service capacity in regional networks.

Recent iterations of homeland security policies provide support for the creation of a regional fire service network model. The NPG affirms that targets outlined in the Preparedness Goal are ambitious and "will require a national effort involving the whole community" (DHS, 2011b). The Quadrennial Homeland Security Review recognized and dedicated an entire chapter to the concept of maturing and strengthening the homeland security enterprise. Specifically, the QHSR promotes the building of capable communities, regional response capacity, the creation of unity of effort, the institutionalization of homeland security planning, and the fostering of a broad national culture of cooperation and mutual aid.

The recession that began in 2008 continues to encourage a reengineering of government enterprises, and this momentum can help to facilitate the acceptance of a new network for public-safety response to homeland security incidents. As local government resources continue to decline, the focus on core functions has reemerged in many jurisdictions. In addition, these same budget constraints have renewed interest in shared service arrangements between jurisdictions. Further, governments realize that these are permanent budget reductions, not cyclical, as they have seen in prior years.

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b.   *Planning in Regional Networks*

The Metropolitan Planning Organization is an example of regional coordination that uses an interdependent system among federal, state, and local governments. The federal government recognized the value of regional planning and coordination when it mandated metropolitan planning organizations (MPO) in 1962 to carryout transportation projects and programs. The federal government adopted this process to ensure that all federally funded transportation projects use the same process, known as the "3 Cs": continuing, cooperative, and comprehensive planning process. Congress identified several key reasons that MPOs are essential: (a) transportation investment means allocating scarce federal and other transportation funding resources appropriately, (b) planning needs to reflect the region's shared vision for its future, (c) adequate transportation planning requires a comprehensive examination of the region's future and investment alternatives, and (d) an MPO is needed to facilitate collaboration of governments, interested parties, and residents in the planning process (United States Department of Transportation, 2011).

The homeland security enterprise faces ongoing criticism of its planning process and therefore the results of those weak processes. The metropolitan planning organization (MPO) model used for regional transportation infrastructure projects provides a proven framework for FEMA regional jurisdictions to consider in their quest to evolve. The Federal Highway Administration coordinates critical multi-state, regional policy and infrastructure programs using this process, which provides input from stakeholders and elected officials to drive transportation and community policy. The structural process is worthy of further study for its application to the homeland security enterprise.

c.   *The Potential for Future Research Efforts and Federal Investment in Homeland Security Training*

The investment in employee professional development is sizable and ongoing, from the time a recruit graduates basic training up to, and including his last year of employment. Currently the homeland security enterprise has no method to evaluate

and contrast these investments from a fiscal perspective. In addition, the sophistication of homeland security training has advanced beyond in-service training on new equipment and drilling on plans to demonstrate proficiency. The new field of homeland security at the higher echelons is more in step with the type of development provided to today's professional soldiers.

In an effort to continue the development of the homeland security discipline, it is important to identify and assess the true costs associated with these investments. Additional research more specific to the creation of a regional fire service network model includes the assessment of the need for a staff and command program centered on the next generation of public safety leaders developed to work specifically in the new domain.

The military provides one example of a discipline that recycles its knowledge base after personnel retire from active service, essentially multiplying the investment of formal training and experience. The notable feature is that the knowledge base remains within the service sector, creating further benefit. How can the homeland security enterprise make use of the same concepts adapted from the military?

8.   Conclusion

The DHS doctrine intended to strengthen coordination among local, federal, and state responders falls woefully short of its objective and unwisely places the full responsibility onto disparate local government mayors, emergency managers, fire chiefs, and police chiefs. The most recent national preparedness directive, Presidential Policy Directive (PPD-8) National Preparedness requires the development of a national preparedness goal by the Secretary of Homeland Security. Specifically, and related to the thesis, PPD-8 requires "an integrated, layered, and all-of-Nation preparedness approach that optimizes the use of available resources." (White House, 2011). Creating a regional fire service network provides a mechanism to use existing resources efficiently and advances its knowledge and capability.

The loosely structured homeland security enterprise is not capable of achieving the mission in its current form, as we observe during actual emergency incidents and

through independent assessments. The solutions proffered provide a practical, low-cost, high-return reengineering of U.S. fire services to serve the homeland security enterprise.

LIST OF REFERENCES

Advisory Panel on Department of Defense Capabilities for Support of Civil Authorities after Certain Incidents. (2010). Before disaster strikes: Imperatives for enhancing defense support of civil authorities. Arlington, VA: Rand.

Agranoff, R., & McGuire, M. (2001). American federalism and the search for models of management. *Public Administration Review* 61(6): 671–81. Retrieved May 7, 2011, from http://www.jstor.org/pss/3110002

Arlington County after action report on the response to the September 11 terrorist attack on the Pentagon. (2002). Retrieved January 7, 2011, from http://www.arlingtonva.us/departments/Fire/Documents/after_report.pdf

Arlington County Conference Report. (2003). Presented at the conference Local Response to Terrorism: Lessons Learned from the 9/11 Attack at the Pentagon, Arlington County, Virginia. Retrieved July 7, 2011, from http://www.arlingtonva.us/departments/EmergencyManagement/pdf/ARCO_Conf _Report.pdf

Bellavita, C. (2011). Changing homeland security: In 2010, was homeland security useful? *Homeland Security Affairs* 7: 1–11.

Bipartisan Policy Center. (2011). Tenth anniversary report card: The status of the 9/11 Commission recommendations. Retrieved September 20, 2011, from http://www.bipartisanpolicy.org/sites/default/files/CommissionRecommendations. pdf

Bogard, A. (2011). United we stand, divided we fall: Increasing response capability in Kentucky through regionalization and leadership. Master's thesis, Naval Postgraduate School, Monterey, CA.

Caruson, K., & MacManus, S.A. (2006). Mandates and management challenges in the trenches: An intergovernmental perspective of homeland security. *Public Administration Review* 66(4). Retrieved November 20, 2010, from http://onlinelibrary.wiley.com/doi/10.1111/j.1540-6210.2006.00613.x/full

Caruson, K., & MacManus, S. A. (2008). Disaster vulnerabilities: How strong a push toward regionalism and intergovernmental cooperation? *American Review of Public Administration* 38(3): 286–306.

Chenoweth E., & Clark S. (2009). All terrorism is local; Resources, nestled institutions, and governance from urban homeland security in the American federal system. *Political Research Quarterly* 63(3): 495–507. Retrieved June 7, 2011, from http://prq.sagepub.com/content/63/3/495.abstract

Clovis, Samuel H., Jr. (2006). Federalism, homeland security, and national preparedness: A case study in the development of public policy. *Homeland Security Affairs* 2(3). Retrieved November 22, 2010, from http://www.hsaj.org/?article=2.3.4

Clovis, Samuel H., Jr. (2008). Promises unfulfilled: The suboptimization of homeland security national preparedness. *Homeland Security Affairs* 4(3). Retrieved November 11, 2010, from http://www.hsaj.org/?article=4.3.3

Clovis, Samuel H., Jr. (2008). Normalizing jurisdictional traits. In Vulnerability in Large Urban Settings. Midwest Political Science Association Annual Conference, Chicago, IL.

Clovis, Samuel H., Jr. (2009). Applying contemporary intergovernmental management models to emergency management: Integrating boards, agents and professionals. American Society for Public Administration, National Conference. Miami, FL.

Collier, J. S., & Lakoff, A. (2008). Distributed preparedness: the spatial logic of domestic security in the United States. *Environment and Planning: Society and Space* 26: 7–28. Retrieved May 3, 2011, from http://envplan.com/abstract.cgi?id=d446t

Congressional Research Service. (2008). Homeland emergency preparedness and the national exercise program: Background, policy implications, and issues for Congress. Retrieved June 3, 2011, from http://www.fas.org/sgp/crs/homesec/RL34737.pdf

Conlin, T. J., & Posner, P. L. (2008). *Intergovernmental management for the twenty-first century*. Washington, D.C.: Brookings Institution.

Coping with catastrophe: Building an emergency management system to meet people's needs in natural and manmade disasters. (1993). Washington D.C.: National Academy of Public Administration.

Council on Foreign Relations. (2003). Emergency responders: Drastically underfunded, dangerously unprepared. Task Force Report No. 47. Retrieved December 4, 2010, from http://www.cfr.org/terrorism/emergency-responders/p6085

Drabek, T. E. (2003). Five types of strategies for coordinating disaster responses. *Aspep Journal*. Retrieved July 9, 2011, from training.fema.gov/EMIweb/downloads/Dr1ThomasDrabek.doc

Eaglen, M. M. (2007). The DHS budget for FY2008: Time for a comprehensive approach to homeland security. Retrieved June 9, 2011, from http://www.heritage.org/research/reports/2007/03/the-dhs-budget-for-fy-2008-time-for-a-comprehensive-approach-to-homeland-security

Emergency Support Function 15 standard operating procedures. (2009). Retrieved June 7, 2011, from http://www.fema.gov/pdf/emergency/nrf/esf15_sop.pdf

Falkenrath, R. A. (2001). Problems of preparedness. *International Security* 25(4), 147–86.

Fossett, J. W., Kettl, D., & Posner, P. (2003). The role of "home" in homeland security: The federalism challenge. Retrieved October 22, 2010, from http://www.rockinst.org/pdf/disaster_recovery/homeland_security/2003-01-31-the_role_of_home_in_homeland_security_public_health.pdf

Foundation, T. H. (2006). Empowering America: A proposal for enhancing regional preparedness. *Heritage Special Report*. Retrieved May 7, 2011, from http://www.heritage.org/research/reports/2006/04/empowering-america-a-proposal-for-enhancing-regional-preparedness

Gerber, B. J. (2005). On the front line: American cities and the challenge of homeland security preparedness. *Urban Affairs Review* 41(2): 182–209. Retrieved June 13, 2011, from http://uar.sagepub.com/content/41/2/182.abstract

International Association of Fire Chiefs. (2011). Terrorism response: A checklist guide for fire chiefs and community preparedness leaders. Retrieved September 11, 2011, from http://www.iafc.org/files/1DISASTERmgntHOMEsec/IAFC_Terrorism_Response.pdf

Jackson, B. A. (2008). The problem of measuring emergency preparedness: The need for assessing "response reliability" as part of homeland security planning. Santa Monica, CA: Rand. Retrieved January 4, 2011, from http://www.rand.org/pubs/occasional_papers/2008/RAND_OP234.pdf

Jenkins, William O., Jr. (2011). Measuring disaster preparedness: FEMA has made limited progress in assessing national capabilities. Washington, D.C.: Government Accountability Office. Retrieved March 15, 2011, from http://www.gao.gov/new.items/d11260t.pdf.

Karter, M. J. (2010). U.S. fire department profile through 2009. Retrieved July 9, 2011, from http://www.nfpa.org/itemDetail.asp?categoryID=417&itemID=18246&URL=Research%20&%20Reports/Fire%20reports/Fire%20service%20statistics

Kean, T. H. L. (2011). Tenth anniversary report card: The status of the 9/11 Commission recommendations. Retrieved September 15, 2011, from http://www.bipartisanpolicy.org/library/report/tenth-anniversary-report-card-status-911-commission-recommendations

Kettl, D. F. (2003). Contingent coordination: Practical and theoretical puzzles for homeland security. *American Review of Public Administration* 33(3): 253–76. Retrieved June 13, 2011, from http://arp.sagepub.com.libproxy.nps.edu/content/33/3/253.full.pdf

Kettl, D. F. (2007). *Systems under stress: Homeland security and American politics.* Washington, D.C.: CQ Press.

Kuhn, T. S. (1996). *The structure of scientific revolutions* (3d ed.). Chicago: University of Chicago Press.

Leedy, P. D. O., J.E. (2010). *Practical research planning and design* (9th ed.). Upper Saddle River, NJ: Pearson.

MacManus, S. A., & Caruson, K. (2008). Financing homeland security and emergency preparedness: Use of interlocal cost-sharing. *Public Budgeting and Finance* 28(2): 48–68. Retrieved November 20, 2010, from http://www.blackwellpublishing.com/journal.asp?ref=0275-1100

McKinsey & Company. (2002). Increasing FDNY's preparedness. Retrieved May 5, 2011, from http://www.nyc.gov/html/fdny/html/mck_report/toc.html

Metropolitan Washington Council of Governments. (2010). *Homeland security strategic plan*. Retrieved May 7, 2011, from http://www.mwcog.org/store/item.asp?PUBLICATION_ID=278.

Metropolitan Washington Council of Governments. (2010). Regional emergency coordination plan. Retrieved May 7, 2011, from http://www.mwcog.org/store/item.asp?PUBLICATION_ID=401.

Morton, J. F. (2008). State/local issue team problem analysis. Retrieved May 2, 2011, from http://www.pnsr.org/data/images/state-local%20final%20problem%20analysis.pdf

National Academy of Public Administration. (1993). Coping With catastrophe: A report for the U.S. Congress and Federal Emergency Management Agency. Washington, D.C.: National Academy of Public Administration.

National Academy of Public Administration. (2004). Advancing the management of homeland security. Washington, D.C.: National Academy of Public Administration.

National Fire Protection Association. (2011a). Third needs assessment of the U.S. fire service. Retrieved June 18, 2011, from http://www.nfpa.org/assets/files/2011NeedsAssessment.pdf

National Fire Protection Association. (2011b). U.S. fire loss. *NFPA Journal*. Retrieved September 20, 2011, from http://www.nfpa.org/publicJournalDetail.asp?categoryID=2249&itemID=53060&src=NFPAJournal

New Jersey Municipal Data Book. (2010). Woodside, CA: Information Publications.

Oakerson, R. J. (1999). *Governing local public economies: Creating the civic metropolis*. Oakland, CA: Institute for Contemporary Studies.

Pelfrey, W. V. (2001). Executive Summary, Office of Domestic Preparedness Training Strategy. U.S. Department of Justice.

Pennsylvania. (2002). Counterterrorism Planning, Preparedness and Response Act, PA Act 227. Retrieved November 20, 2010, from www.portal.state.pa.us/.../act_227_counter_terrorism_planning_prep...

Pennsylvania State Municipal Statistics. Retrieved June 2, 2011, from http://www.newpa.com/get-local-gov-support/municipal-statistics

Peshkin, A. (1993). The goodness of qualitative research. *Educational Researcher* 22: 23–29.

Project on National Security Reform. (2009). Recalibrating the system: Toward efficient and effective resourcing of national preparedness. Retrieved July 8, 2011, from http://www.pnsr.org/data/files/pnsr_national_preparedness_system.pdf

Quarantelli, E.L. (1995). Disaster planning, emergency management, and civil protection: The historical development of organized efforts to plan for and to respond to disasters. Disaster Research Center Preliminary Paper #227. Newark, DE: University of Delaware. Retrieved August 3, 2011, from http://dspace.udel.edu:8080/dspace/bitstream/handle/19716/673/PP301.pdf?sequence=1

Schwartz, J. (2011). Arlington County fire chief recalls Pentagon response. Retrieved September 8, 2011, from http://www.firehouse.com/news/911news/arlington-county-fire-chief-recalls-pentagon-response

Select Bipartisan Committee to Investigate the Preparation of and Response to Hurricane Katrina. (2006). A failure of initiative. Retrieved June 3, 2011, from http://www.gpoaccess.gov/serialset/creports/katrinasupp.html

Townsend, F. F. (2006). The federal response to Hurricane Katrina: Lessons learned. Retrieved May 2, 2011, from http://georgewbush-whitehouse.archives.gov/reports/katrina-lessons-learned/

United States Department of Homeland Security. (2006). Civil defense and homeland security: A short history of national preparedness efforts. Retrieved December 4, 2010, from http://training.fema.gov/EMIWeb/edu/docs/DHS%20Civil%20Defense-HS%20-%20Short%20History.pdf

United States Department of Homeland Security. (2007). *Target capabilities list*. Retrieved January, 15, 2011, from http://www.fema.gov/pdf/government/training/tcl.pdf

United States Department of Homeland Security. (2008). National response framework. Retrieved March 3, 2011, from http://www.fema.gov/pdf/emergency/nrf/nrf-core.pdf

United States Department of Homeland Security. (2010a). DHS risk lexicon. Retrieved November 11, 2010, from http://www.dhs.gov/xlibrary/assets/dhs_risk_lexicon.pdf

United States Department of Homeland Security. (2010b). Quadrennial homeland security review report. Retrieved December 20, 2010, from http://www.dhs.gov/xlibrary/assets/qhsr_report.pdf

United States Department of Homeland Security. (2010c). Perspective on preparedness: Taking stock since 9/11. Retrieved June 7, 2011, from http://www.fema.gov/pdf/preparednesstaskforce/perspective_on_preparedness.pdf

United States Department of Homeland Security. (2010d). Bottom-up review report. Retrieved June 10, 2011, from http://www.dhs.gov/xlibrary/assets/bur_bottom_up_review.pdf

United States Department of Homeland Security. (2011a). Presidential policy directive 8. Retrieved September 1, 2011, from http://www.dhs.gov/xlibrary/assets/presidential-policy-directive-8-national-preparedness.pdf.

United States Department of Homeland Security, National Preparedness Goal. (2011b). Retrieved September 17, 2011, from http://www.fema.gov/pdf/prepared/npg.pdf

United States Government Accountability Office. (2004). Homeland security effective regional coordination can enhance emergency preparedness. GAO-04-1009. Retrieved January 9, 2011, from http://www.gao.gov/new.items/d041009.pdf

United States Government Accountability Office. (2007). Observations on DHS and FEMA efforts to prepare for and respond to major and catastrophic disasters and address related recommendations and legislation. Retrieved December 11, 2010, from http://www.gao.gov/new.items/d071142t.pdf

United States Government Accountability Office. (2009). UASI FEMA lacks measures to assess how regional collaboration efforts build preparedness capabilities. GAO-09-6518. Retrieved March 4, 2011, from http://www.gao.gov/new.items/d09651.pdf

United States Government Accountability Office. (2010). FEMA has made limited progress in efforts to develop and implement a system to assess national preparedness capabilities. GAO-51R. Retrieved March 3, 2011, from http://www.gao.gov/new.items/d11260t.pdf

United States Government Accountability Office. (2011a). Department of Homeland Security: Progress made and work remaining in implementing homeland security missions 10 years after 9/11. Retrieved September 20, 2011, from http://www.gao.gov/new.items/d11881.pdf

United States Government Accountability Office. (2011b). FEMA needs to improve its oversight of grants and establish a framework for assessing capabilities to identify gaps and prioritize investments. GAO-11-318SP. Washington, DC: Government Accountability Office.

United States Department of Transportation. (2011). Metropolitan planning. *Legislation & Regulations.* Retrieved September 14, 2011, from http://www.fhwa.dot.gov/planning/metro/index.htm#practices

White House. (2011). Presidential policy directive 8: National preparedness. Retrieved April 3, 2011, from http://www.dhs.gov/xlibrary/assets/presidential-policy-directive-8-national-preparedness.pdf

Wilson, J. Q. (1989). *Bureaucracy: what government agencies do and why they do it.* Vol. 1. New York: Basic Books.

Wise, C. R., & Nader, R. (2002). Organizing the federal system for homeland security: Problems, issues, and dilemmas. *Public Administration Review* 62 (Special Issue): 44–57.

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